From the desk of...

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Memo

To: Board of Managers

From: Michael Younes, Director of Municipal Operations

CC: Shana Davis-Cook, Village Manager

Date: 12/2/2013

Re: Update on Village Streetlight Improvements – LED Streetlights

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Background[1]

Since March 2010, PEPCO has been exploring the possibility of using light-emitting diode (LED) technology for street lighting. LED lights are more energy efficient than other types of lighting and emit a true white light. LED lights differ from traditional lights in that the latter is naturally refractive because the light emitted from the filament disperses in all directions. Light from LEDs is directional because the light comes from a direct light source called a diode.

The Maryland Public Service Commission (PSC) has approved the use of LED streetlights and has issued a tariff from which interested communities, including the Village, can purchase the lights from PEPCO.

PEPCO has completed its process of reviewing and selecting manufacturer pricing for the different types of LED fixtures and are now available for purchase. Because the technology is new to PEPCO and it is unknown how many of its streetlight users will opt to convert to LEDs, PEPCO will not stock the LED lights in its inventory early on. Any jurisdictions wishing to convert to LEDs would do so on a made-to-order basis.

Streets for Village LED Pilot Program

The following streets were selected and approved by the Board at its March 2013 regular meeting to serve for the Village's pilot program:

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[1] See Appendix for a Timeline of Board/Committee Action pertaining to street lighting improvement efforts in the Village beginning in 2008.

CHEVY CHASE VILLAGE
ESTABLISHED 1890

- Full length of East Lenox Street:
    - Six (6) – 100W teardrop LED fixtures
- Grafton Street (between Chevy Chase Circle and Cedar Parkway):
    - Seven (7) – Replace existing flat glass fixtures with "sag" lenses.[2]
- Grafton Street (between Cedar Parkway and Kirkside Drive):
    - Eight (8) – 70W cobra-head LED fixtures
- West Kirke Street (between Connecticut Avenue and Magnolia Parkway):
    - Six (6) – 100W teardrop LED fixtures
- West Kirke Street (between Cedar and Magnolia Parkways):
    - Three (3) – 70W cobra-head LED fixtures

Pictures of Street lights

Traditional Cobra Head

Sag Lens Cobra Head

Teardrop Style

Installation Timing

Current estimated lead times for delivery and installation are between 6 – 8 weeks. Installation is subject to weather delays and PEPCO contractor availability to install the lights.

[2] Should the Village's LED pilot program result in a less than satisfactory light output; the existing high pressure sodium (HPS) can be outfitted with old style "sag" lenses. The optics of the sag lens will disperse light over a wider area. In order to ensure this condition will be acceptable a sample set of existing HPS lights will be retrofitted with sag lenses.

Timing would still aim to have the lights installed during the winter months in order to take advantage of viewing unmasked light output before the trees leaf out.

Cost

Based on tariff rates for installation, PEPCO has estimated installation at approximately $723 per new LED streetlight and $365 per light for the sag lens conversion. Below is a breakdown per street:

East Lenox Street – six (6) lights	$4,339
Grafton Street (between Cedar Parkway and Kirkside Drive) – eight (8) lights	$5,786
West Kirke Street – nine (9) lights	$6,509
Grafton Street (between Chevy Chase Circle and Cedar Parkway) – sag lens conversion – seven (7) lights	$2,552

Total Cost	**$19,186**

Next Steps

If Board approval is received to proceed with the Village's LED streetlight pilot program. Staff will photo document all test areas, before and after installation of the new LED lights, in order to evaluate the lumen output (brightness) and how the light is dispersed by the new fixtures. Now that we are into the winter months and the tree canopy is almost non-existent, installation of the new lights would proceed to allow for a complete evaluation during all seasons.

Since past efforts to passively solicit feedback through the *Crier* and website, have yielded sparse results, staff recommends conducting a survey of Village residents via direct mailer. Once resident feedback and the staff's evaluations are received and reviewed, a recommendation for next steps will be forwarded for Board review and possible action.

Board Action

If the Board wishes to proceed with the Village's LED Pilot Program, staff requests authorization to engage PEPCO and proceed with the conversion of twenty-three (23) HPS to LED streetlights and conversion of seven (7) streetlights using sag lenses at a cost of $19,186.

Attachments

Appendix—Timeline of Board/Committee Action
Map of Pilot Locations
CIP Expenditure Detail Sheet

Appendix

Timeline of Board/Committee Action

January 2008 – The Energy Policy Act of 2005 becomes effective, which prohibits the manufacturing and importing of mercury vapor bulbs, due to the high levels of mercury needed for the manufacturing process. When the Act was passed all of the streetlights in the Village used mercury vapor bulbs. Once PEPCO's supplies of the old bulbs ran out they would be replaced with high pressure sodium (HPS) bulbs per the new act.

February 2009 – March 2010 – The Board of Managers authorized a photometric (light dispersion) survey to be conducted to determine baseline conditions and to provide alternative street lighting configurations. During this period, a subset of the Public Works Committee (PWC) worked with the survey firm to review and discuss proposed options. The survey identified a total of twenty-three (23) critical "dark spots" and determined that the existing street lighting did not meet Illuminating Engineering Society (IES) recommended criteria. The survey cited several factors which contributed to the sub-par lighting, such as light pole spacing and lamp lumen depreciation of the old mercury vapor bulbs.

The survey also outlined several options for increasing the lighting dispersion throughout Village rights-of-way, including closer pole spacing, higher bulb wattages, and the use of light bulb technology that would not have a rapid light depreciation. At the beginning of the survey, light-emitting diode (LED) streetlight technology was being introduced in the industry and study information was not yet available.

March 2010 – PEPCO begins its LED streetlight pilot program in the Town of Somerset and at National Harbor in Prince George County. Also and at the Village's request, PEPCO installed (at no cost) two (2) sample streetlight fixtures using an induction bulb across from the Village Hall to aid the PWC's streetlight review and to gather resident feedback.

April 2010 - An article is included in the April issue of the *Crier* advertising the two (2) sample streetlights and soliciting resident feedback on the samples.

May 2010 – The PWC met to review the results of the photometric survey, to discuss PEPCO's LED pilot program and what interim steps could be taken to improve Village street lighting. An additional three (3) streetlight fixtures using high pressure sodium (HPS) bulbs were installed by PEPCO (at no cost) across from the Village Hall to further aid the PWC's streetlight review and to gather resident feedback.

June 2010 – An article is included in the June issue of the *Crier* advertising the five (5) sample streetlights and soliciting resident feedback on the additional samples.

June 2010 – The PWC met to continue its discussion of options for replacing or upgrading Village streetlights.

July 2010 – The PWC presented its report to the Board advising that the Committee had researched and invited public comment (less than 5 responses were received) on the sample streetlights installed across from the Village Hall. After assessing the sample lights and the cost of converting the existing mercury vapor bulbs to induction bulbs, the PWC recommended postponing the overall replacement of all Village streetlights pending PEPCO's launch of LED lights and recommended that the Village contact PEPCO to install its high pressure sodium (HPS) light bulbs at no cost to the Village.

Once PEPCO replaced the existing mercury vapor bulbs with high pressure sodium (HPS) bulbs, the Committee recommended a reassessment of remaining "dark spots" throughout the community to determine where new fixtures should be installed. *The Board unanimously approved the PWC's recommendation.*

September 2010 – Staff presents an update report to the Board regarding the status of all current and proposed capital projects including the progress made thus far on investigating the possibility of streetlight replacements and PEPCO's conversion to high pressure sodium (HPS) bulbs.

December 2010 –The Village Police Department conducts a follow-up survey of the existing street lighting in the Village after PEPCO completes its conversion to high pressure sodium bulbs. Based on the survey results the number of dark spots has not decreased.

February 2011 – An article is included in the February issue of the *Crier* requesting additional resident feedback on dark or malfunctioning streetlights. One response was received.

February 2011 – Following several meetings of the PWC about streetlights and other topics, the Committee presented a report to the Board recommending that the Board approve funds to install further lighting to illuminate fourteen (14) of the worst "dark spots" estimated at a cost of $28,000. The Board directed staff to include the expenditure on the draft Capital Improvements Plan (CIP) for FY 2012.

April 2011 - *The Board of Managers approves the FY 2012 budget that includes $30,000 for interim streetlight improvements to address "dark spots".*

Summer 2011 – Village staff works with PEPCO to inventory all Village streetlights to ensure all are working at peak output. During this period multiple street lights were replaced (at no cost) due to malfunctioning components.

November 2011 – At my request, a second street light survey was conducted by the Village Police Department and following PEPCO's repairs of malfunctioning streetlights, under the direction of newly hired Chief of Police John Fitzgerald. Unfortunately, the survey identified numerous "dark spots" mainly due to low canopy, poorly spaced lights and inadequate light dispersion.

December 2011 – Chief Fitzgerald and I meet with PEPCO streetlight engineers to review the list of "dark spots" and to request cost estimates to install new lights and to determine the best wattage for the new lights to provide maximum light dispersion.

February 2012 - Staff recommends to the Board that a two (2) phase approach be taken over FY12 and FY13. In FY12, address the highest priority "dark spots", re-survey to further analyze the remaining "dark spots" and determine if further vulnerabilities appear. In FY13, address the remaining "dark spots", while waiting for LED technology to become available. *The Board unanimously approved the staff's recommendation.*

May 2012 – PEPCO completes design and engineering work for the additional streetlights and begins installation.

June 2012 – An article is included in the June issue of the *Crier* providing a status update on the installation of the new streetlights and requesting additional resident feedback on dark or malfunctioning streetlights. PEPCO completes streetlights installations in mid-June. New streetlights were installed in the following locations:

- Grafton Street and Magnolia Parkway (Boxwood Area): *Two new lights on existing poles*
- Across from All Saints Church on Oliver Street
- Across from 3909 Oliver Street
- Across from 3915 Oliver Street
- In front of 3922 Oliver Street
- Across from 3931 Oliver Street
- In front of 6320 Broad Branch Road
- In front of 102 Summerfield Road
- Between 108 and 110 Summerfield Road
- Laurel Parkway behind Public Works Yard
- East Irving Street between Connecticut Avenue and 4 East Irving Street
- Intersection of Grafton Street and Cedar Parkway
- Magnolia Parkway and West Kirke Street intersection

July 2012 – Another article is included in the July issue of the *Crier* stating that PEPCO had completed installation of the additional street lights and, once again, requesting additional resident feedback on the new lights, remaining dark spots and malfunctioning lights.

September 2012 – At my request, the Village arborist surveys all trees that surround streetlights to assess how to sensibly prune the trees to allow for adequate light dispersion, while maintaining a healthy canopy of trees. Over the course of late September and October, the Village tree maintenance contractor executes the prescribed pruning activities.

October 2012 – Following the additional streetlight installations and tree pruning activities, the Village Police Department conducts a third streetlight survey. They find that

the additional lights and tree pruning have helped increase light dispersion in some areas while others remain dark due to pole spacing and poor light output.

October and November 2012 - Additional articles are included in the October and November issues of the *Crier* updating the Village of tree pruning activities and the overall status of the effort to improve the Village's street lighting and requesting additional resident feedback on the new lights, further remaining dark spots and malfunctioning lights.

December 2012 - Following a report from staff regarding the availability of LED street lighting, the Board agreed to temporarily suspend additional streetlight improvements until LED streetlights are available. In the interim, the Board requested that the staff provide recommended locations where LED streetlights could be installed as part of an in-house pilot program.

March 2013 – Staff provided an update on the status of LED streetlights and listing of its proposed pilot sample locations. The locations include the full length of East Lenox Street, Grafton Street (between Cedar Parkway and Kirkside Drive) and full length of West Kirke Street. The Board unanimously supported staff's recommended locations.

Legend

- 70W Cobra head LED Fixture
- 100W Teardrop LED Fixture
- Sag Lens Conversion Only

LED Streetlight Pilot Locations

0 250 500 1,000 1,500 Feet

Complied by: M. Younes 11/19/2013
Source: Chevy Chase Village

Project Detail Sheet

Village-Wide Streetlight Upgrade Project

Category	Infrastructure	**Date Last Modified**	February 1, 2013
Department	Public Works/Police	**Funding Source**	*SafeSpeed*
Zone Location	1, 2, 3, 4	**Status**	Planning Stage/Interim Improvements

EST. EXPENDITURE SCHEDULE (dollars in thousands)

Cost Element	Total	Est. FY13	Total 6 Years	FY14	FY15	FY16	FY17	FY18	FY19	Beyond 6 Years
Planning, Design and Supervision	2	1	1	1	0	0	0	0	0	0
Land acquisition	0	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	0	0	0	0	0	0	0	0	0	0
Construction	402	20	382	307	15	15	15	15	15	15
Other	0	0	0	0	0	0	0	0	0	0
Total	**404**	**21**	**383**	**308**	**15**	**15**	**15**	**15**	**15**	**15**

EST. FUNDING SCHEDULE (dollars in thousands)

SafeSpeed Revenues	404	21	383	308	15	15	15	15	15	15
Total	**404**	**21**	**383**	**308**	**15**	**15**	**15**	**15**	**15**	**15**

EST. OPERATING BUDGET IMPACT (dollars in thousands)

Labor/Maintenance				-8	-10	-2	-2	-2	-2	-2
Materials/Equipment				0	0	0	0	0	0	0
Total				**-8**	**-10**	**-2**	**-2**	**-2**	**-2**	**-2**

Description

This project will replace all 262 High Pressure Sodium streetlights owned by PEPCO with Light Emitting Diode (LED) streetlights. PEPCO is currently testing various types of LED in several locations in the region, based on the results from the study on the service reliability and light dispersion PEPCO will offer an approved LED streetlight. LED lights emit a white light and consume near 80% less electricity and have a near 60% longer lifespan. The project will enhance and upgrade the exiting street lighting creating safer pedestrian and vehicular access throughout the Village. As a result of the increased pedestrian, vehicular and public safety this project is eligible for funding under the *SafeSpeed* program.

As an interim measure, in coordination with the Village Police Department additional streetlight would be installed using the high pressure sodium bulbs to alleviate dark-areas within the Village right-of-ways.

Estimated Schedule

The LED street lighting is scheduled to be available in April/May 2013.

Cost Change

Early cost estimates for the LED conversion has come in at around $310K which is approximately$500K less than previous thought due to new standardized installation rates offered by PEPCO. Staff is currently in discussions with PEPCO management regarding further cooperative funding opportunities.

Justification

This project would enhance and upgrade the exiting street lighting creating safer pedestrian and vehicular access throughout the Village. As a result of the increased pedestrian, vehicular and public safety this project is eligible for funding under the *SafeSpeed* program. The project has also been a recommended by the Public Works Committee and 2009 Resident Survey to be a priority. The use of LED streetlights will also reduce the Village's carbon footprint since the LED streetlights would use almost 80% less energy.

Coordination

Board of Managers
General Government
Police Department
Public Works Committee
PEPCO

Map